VIRAL HEMORRHAGIC FEVERS

MARBURG HEMORRHAGIC FEVER

Marburg hemorrhagic fever is a rare, severe type of hemorrhagic fever that affects both humans and nonhuman primates. Caused by a genetically unique zoonotic (that is, animal-borne) RNA virus of the filovirus family, its recognition led to the creation of this virus family. The four species of Ebola virus are the only other known members of the filovirus family.

Marburg virus was first recognized in 1967, when outbreaks of hemorrhagic fever occurred simultaneously in laboratories in Marburg and Frankfurt, Germany, and in Belgrade, Yugoslavia (now Serbia). A total of 37 people became ill; they included laboratory workers, as well as several medical personnel and family members who had cared for them. The first people infected had been exposed to African green monkeys or their tissues. In Marburg, the monkeys had been imported for research and to prepare polio vaccine.

Recorded cases of the disease are rare and have appeared in only a few locations. While the 1967 outbreak occurred in Europe, the disease agent had arrived with imported monkeys from Uganda. No other case was recorded until 1975, when a traveler most likely exposed in Zimbabwe became ill in Johannesburg, South Africa, and passed the virus to his traveling companion and a nurse. Two other cases occurred in 1980 – one in Western Kenya not far from the Ugandan source of the monkeys implicated in the 1967 outbreak. This patient's attending physician in Nairobi became the second case. Another human Marburg infection was recognized in 1987 when a young man who had traveled extensively in Kenya, including western Kenya, became ill and later died.

Marburg virus is indigenous to Africa. While the geographic area to which it is native is unknown, this area appears to include at least parts of Uganda and Western Kenya, and perhaps Zimbabwe. As with Ebola virus, the actual animal host for Marburg virus remains a mystery. Both of the men infected in 1980 in western Kenya had traveled extensively in that region, including making a visit to a cave. The cave was investigated by placing sentinels animals inside to see if they would become infected and by taking samples from numerous animals and arthropods trapped during the investigation. The investigation yielded no virus; in fact, the sentinel animals remained healthy and no virus isolations from the samples obtained have been reported.

Just how the animal host first transmits Marburg virus to humans is unknown. However, as with some other viruses that cause viral hemorrhagic fever, humans who become ill with Marburg hemorrhagic fever may spread the virus to other people. This may happen in several ways. People handling infected monkeys who come into direct contact with them or their fluids or cell cultures have become infected. Spread of the virus among humans has occurred in a setting of close contact, often in a hospital. Droplets of body fluids or direct contact with people, equipment or other objects contaminated with infectious blood or tissues all are highly suspect as sources of disease.

After an incubation period of five to 10 days, the onset of the disease is sudden and is marked by fever, chills, headache and myalgia. Around the fifth day after the onset of symptoms, a maculopapular rash, most prominent on the trunk (chest, back, stomach), may occur. Nausea, vomiting, chest pain, a sore throat, abdominal pain and diarrhea then may appear. Symptoms become increasingly severe and may include jaundice, inflammation of the pancreas, severe weight loss, delirium, shock, liver failure, massive hemorrhaging and multi-organ dysfunction. Because many of the signs and symptoms of Marburg hemorrhagic fever are similar to those of other infectious diseases, such as malaria or typhoid fever, diagnosis of the disease can be difficult, especially if only a single case is involved.

Recovery from Marburg hemorrhagic fever may be prolonged and accompanied by orchititis, recurrent hepatitis, transverse myelitis or uvetis. Other possible complications include prolonged hepatitis, as well as inflammation of the testis, spinal cord, eye and parotid gland. The case-fatality rate for Marburg hemorrhagic fever is between 23 percent and 25 percent.

A specific treatment for this disease is unknown. However, supportive hospital therapy should be utilized. This includes balancing the patient's fluids and electrolytes, maintaining their oxygen status and blood pressure, replacing lost blood and clotting factors and treating them for any complicating infections.

Sometimes treatment also has used transfusion of fresh-frozen plasma and other preparations to replace the blood proteins important in clotting. One controversial treatment is the use of heparin (which blocks clotting) to prevent the consumption of clotting factors. Some researchers believe the consumption of clotting factors is part of the disease process.

Because of limited knowledge about the disease, preventive measures against transmission from the original animal host have not yet been established. Measures for prevention of secondary transmission are similar to those used for other hemorrhagic fevers. If a patient is either suspected or confirmed to have Marburg hemorrhagic fever, barrier nursing techniques should be used to prevent direct physical contact with the patient. These precautions include wearing protective gowns, gloves and masks; placing the infected individual in strict isolation; and sterilizing or proper disposing of needles, equipment and patient excretions.

For more information, call the North Dakota Department of Health at 701.328.2378.